In the Office Action of June 2, 2000, Claims 1-3, 5, 7, 8 and 11 were rejected under 35 U.S.C. § 102(b) as being anticipated by Maloney et al. (4,728,959) (hereinafter "Maloney"). Claims 6, 9, and 12-16 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Maloney in view of Hilsenrath et al. (6,026,304)(hereinafter "Hilsenrath"). The remaining dependent claims 4 and 10 were rejected under 35 U.S.C. § 103(a) over the combined teachings of Maloney and Willenegger et al. (5,991,284) (hereinafter "Willenegger").

Applicant respectfully submits that new Claims 17-42 are neither anticipated nor made obvious by the teachings of Maloney, Hilsenrath, Willenegger or combination thereof.

The newly added Claim 17 is directed at a method for tracking the location of mobile units. Unlike the teachings of Maloney, which uses an "antenna configuration having three or more pairs of elements, for a total of six elements" (see Maloney, col. 7, lines 43-48) to measure the phase angles, the current invention utilizes only one pair of antenna elements per base station when more than one base station is used (see Specification, p. 8, ¶ 4 and p. 14, ¶ 2). Maloney teaches obtaining phase angle measurements

indicative of the angle of direction of a mobile transmitter station from each of a plurality of land stations using a translated Hilbert transformation, which is processed to produce a probability density function (see Maloney, col. 3, lines 9-14). Using a standard phase detector 74HCT9046, the current invention is capable of producing a reliable reading of the coordinates of the mobile unit using only a pair of antenna elements on two or more base stations. Neither Hilsenrath, nor Willenegger teach a tracking system that utilizes only one pair of antenna elements per base station when more than one base station is used. The independent claim 17 and dependent claims 18-27 are added to emphasize this distinguishing characteristic of the claimed invention.

Additionally, when only one base station with multiple antenna elements is used for location tracking of the mobile units (as claimed in the newly added claims 28-37), the main unit of the current invention obtains the coordinates of the mobile units being tracked. This stands in sharp contrast to the teachings in Maloney, where a single base (support) station measures the angles of direction of the mobile units (transmitters) and the control station is not capable of calculating the coordinates of the

tracked mobile units based on the data collected by a single base station. (See Maloney, col. 4, lines 30-40; col. 5, lines 4-11.)

Additionally, Maloney teaches methods and apparatus for determining the location of a mobile radio transmitter positioned in the service area of a cellular communications telephone system. (See Maloney, col. 1, lines 5-10; col. 4, lines 29-36). In fact, in the tracking system described by Maloney the control land station utilizes cellular environment to notify the base stations to search for certain mobile stations (see Maloney, col. 4, lines 47-56) and monitors cellular transmissions from the mobile units to identify the transmitting mobile units (see Maloney, col. 5, lines 4-16; col. 10, lines 15-25).

Unlike the teachings of Maloney, the current invention is not limited to operation in a cellular environment. In fact, one of its intended uses is indoors or in the areas where cellular communications are not allowed, as for example in the hospitals. As claimed, the newly added claims 18, 29 and 39 emphasize that the stationary base unit periodically polls the mobile units to request signal transmissions from the mobile units in order

to perform continuous tracking of the mobile units.

Another distinctive feature of the claimed invention, as recited in claims 24-27, 34-37, and 38-42, is the use of additional beacons (transceivers) that are positioned in known location to calibrate the signals received from the mobile units. Maloney teaches calibration technique based on the known positions of neighboring land (base) stations. (See Maloney, col. 7, lines 63 - col. 8, line 2). By utilizing portable beacons, whose location may be easily readjusted or changed, the current invention provides a more accurate and flexible calibration technique that is superior to the calibration method taught by Maloney. Also, in contrast to the current invention, Maloney's calibration method, which uses a known position of a neighboring base station, does not work when only one station is utilized or when the transmission signals between the available base stations are blocked.

With respect to the rejection under 35 U.S.C. § 103(a) over the teachings of Maloney and Hilsenrath, as stated on page 4 of the Office Action, the following differences are brought to the Examiner's attention. Neither Maloney, nor Hilsenrath teach the use of the real-

time data received from the beacons to calculate the calibration parameters for the location of the mobile unit. Instead, Hilsenrath utilizes a database of calibrated signal signatures paired with their associated locations, which is first created by the calibration mobile unit. This calibration database is compared with the actual transmission signature of the mobile unit and the associated location of the closest calibration data in the database is taken as a probable location of the mobile cellular unit. (See Hilsenrath, col. 4, lines 54-65).

Thus, applicant respectfully submits that all new claims recite subject matter which patentably distinguishes over the prior art of record under either 35 U.S.C. § 102(b) or § 103(a).

Reconsideration and an early favorable action on the merits are respectfully requested.

Respectfully submitted,

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on 9/25/2000
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